

A NEW *SIDALCEA* (MALVACEAE) FROM NORTHEASTERN CALIFORNIA

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ABSTRACT

Sidalcea gigantea G. Clifton, R. E. Buck, & S. R. Hill is described as a new species from the northwestern slope of the Sierra Nevada in Butte, Plumas, Sierra, and Yuba Counties and from the extreme southern Cascade Range in Shasta County, California. The new species is a robust, long-lived perennial from large and extensive rhizomes; it is one of the tallest species known in the genus and it forms the largest known clonal colonies. Based on both morphological and DNA characters, *S. gigantea* appears to be most closely related to *S. asprella* Greene and *S. celata* (Jeps.) S. R. Hill, both found in the vicinity of the new species. *Sidalcea gigantea* occurs around margins of meadows, seeps, and streams in montane conifer forests, especially Mixed Conifer Forest.

Key Words: California, Cascade Range, malvaceae, new species, *sidalcea*, Sierra Nevada.

Work by G. Clifton on a flora of the Plumas region in the northern Sierra Nevada (unpublished report to U.S. Forest Service, Plumas National Forest) resulted in the recognition of a previously undescribed species of *Sidalcea*. This new species has been known to northern California botanists for years, and it was previously treated as an undescribed taxon by Oswald (2002). It was collected at least as early as 1975 in Plumas County (*F. T. Griggs & A. Pass 273*, CHSC) but it was not recognized as new at that time. For years it has been treated as *Sidalcea malviflora* subsp. *celata* (Jeps.) C. L. Hitchc. (Schlising 1987) or as *S. malviflora* subsp. *asprella* (Greene) C. L. Hitchc. (Hill 1993). Although the species may be locally abundant in small, concentrated populations, it is uncommon overall.

DESCRIPTION

Sidalcea gigantea G. Clifton, R. E. Buck, & S. R. Hill, sp. nov. (Figs. 1, 2, 3) "Giant Checker-bloom"—Type: USA, California, Yuba Co., at Travis Saddle along La Porte Road, in a drying meadow, 39°33'37"N, 121°07'07"W; T20N R8E S30 NE ¼ of SE ¼, ca. 1100 m (3600 ft), 17 August 1996, *G. Clifton 35038* (holotype: JEPS; isotypes, CAS, CHSC, ILLS, MO, NY, PUA, RSA).

Species *S. asprellae* Greene affinis, sed caulibus erectibus (non suffultis) usque ad 2.5 m altis in coloniis extensis, dilatatis fistulosis prope bases, basibus caulium setis numerosis grossis retrorsis epidermalibus (non stellatis), rhizomatibus evolutis bene ca. 0.4–0.6 m longis et 0.6–1 cm

diametro setosis setis epidermalibus usque ad 2.5 mm caducis demum, inflorescentibus ramosis saepe, efferentibus floribus post demum (in Julio a Septembro), et crescentibus excelsioris in montibus ([670–]900–1650[–1950] m.).

Robust perennial herb, in large colonies, stems erect 0.8–2.0 (–2.5) m tall; rhizomes well-developed, horizontal, often matted, generally 0.4–0.6 m long and (0.6–) 1 cm thick, bristly-pubescent (setose) with epidermal bristle hairs to 2.5 mm long, these sloughing off in age; stems generally glaucescent, base purplish-tinted, widest and hollow 20–30 cm above the base where (0.5–) 1–1.4 cm in diameter, pithy at base and above and when immature, surface of stem base setose with numerous retrorse coarse pustulate-based simple hairs 1.5–2.5 mm long, the middle and upper stems and branches glabrous or with a few small sessile stellate hairs (generally 0.1–0.3 mm); stipules (3.5–) 4.5–5 (–8) mm long × 0.6–0.7 (–1.5) mm wide, narrowly lanceolate, sparsely pubescent with minute stellate and simple hairs, early deciduous, associated with pink band on stem; leaves near the base often senescent before the plant matures, lower leaves when present with petioles 6–8 cm long, blades to 7 cm wide, rounded in outline with 4–5 shallow lobes, each lobe again irregularly dentate, light green with sparse sessile stellate hairs on both surfaces, the mid-stem leaves the largest, similar in shape to lower and other mid-stem leaves, with sparsely pubescent petioles 10–14 cm long, the uppermost 5 mm a somewhat flattened paler curved pulvinus 1.8 mm wide; blades ca. 6.5–12 cm long × 10–13 cm wide, like the lower except more deeply divided (3/4 distance to base) into 5–7 strap-shaped segments 15–18 mm wide × 5.5 cm long, coarsely dentate, sparsely hairy with minute

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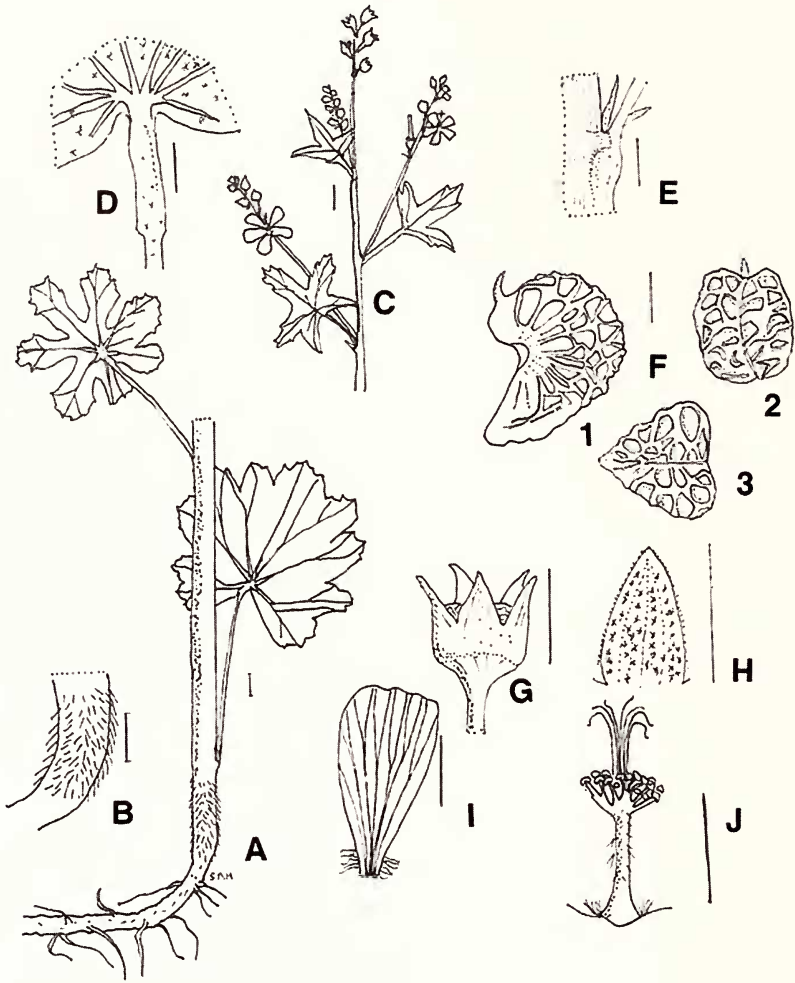


FIG. 1. *Sidalcea gigantea*. A. Plant base, habit, with lower and mid-stem leaves. Scale 1 cm. B. Stem base, enlarged. Scale 1 cm. C. Plant apex, inflorescence, habit with reduced leaves. Scale 2 cm. D. Pulvinus at apex of petiole and attachment to blade. Scale 2 cm. E. Stipules and attachment. Scale 5 mm. F. Mericarp, 3 views: 1) lateral, 2) back, 3) top. Scale 1 mm. G. Fruiting calyx, side view. Scale 1 cm. H. Calyx lobe enlarged. Scale 5 mm. I. Petal. Note: veins are actually pale - pattern is indicated. Scale 1 cm. J. Stamen column, styles of pistillate flower. Scale 5 mm. A, B, E drawn from *Janeway & Castro 7696*; C, D, I, J drawn from *Janeway & Castro 7698*; F, G, H drawn from *D. W. Taylor 15370*. Illustration by Steven R. Hill.

scattered (not dense) simple or 2-4-rayed (6-rayed on lower surface) stellate hairs to 0.5 mm long, gradually reduced in size towards stem apex, in the inflorescence greatly reduced and irregularly 2-3 lobed; inflorescence compound or simple, each branch an interrupted spike-like raceme generally 10-25 cm long, axis glaucous, with minute tufted stellate hairs, bracts single, tardily deciduous, narrowly lanceolate, often bifid, 2.5-3.0 × 0.7 mm, little longer than the pedicel, much shorter than calyx, canescent, attached with pedicel to raised pad on stem; species gynodioecious, flowers pistillate with aborted anthers, or bisexual; flowers on all plants generally 10-20 per branch, well-separated (about 5 mm apart) on stellate canescent pedicels

2-3 (-5) mm long, these longest below; mature calyx (5-) 6-8 mm long, fused at the base, lobes 5, 3-veined, (3.5-) 4-5 mm long, densely stellate on outside (surface ± obscured), the inner surface glabrous except for the similarly pubescent inner lobe margins; petals 5, 14-20 mm long × 7-8 mm wide in bisexual flowers, 7-9 mm × 4-5 mm in pistillate flowers, the claw densely fringed with hairs; the staminal column stellate-pubescent, 5-6 mm long in pistillate flowers, to 8 mm in bisexual flowers; stigmas 6-8, in pistillate flowers extended 4 mm beyond aborted anthers, not extended beyond anthers in bisexual flowers, sometimes poorly developed; mericarps 6-8, 3 mm long × 3.0-4.0 mm tall × 2-3 mm thick (nearly equally sided), surface conspicuously



FIG. 2. *Sidalcea gigantea* colony at the head of Little Grizzly Creek, Plumas Co., CA, showing colonial habit and stature of plants. Scale divisions in decimeters. Plants toward rear of photo are upslope; rod shows stature of immediately adjacent plants. Voucher: Janeway & Castro 7698 (CHSC, VT), 11 August 2002. Photograph by Lawrence Janeway.

reticulate-alveolate dorsally and on outer margins of sides, less so towards axis, margins bulging, back with obvious groove, a few minute glandular and/or stellate hairs on top surface, apical cusp about 1.0 mm long with a few minute simple hairs at tip; seed smooth, glabrous, dark brown, about 1.5 mm \times 1.3 mm \times 2 mm tall, often with a few minute hairs near hilum.

The species produces an extensive rhizome system and often occurs in dense colonies of hundreds or thousands of stems in an area as small as 40 m². Stems are more scattered where the species occurs at forest margins or on drier roadbanks (where there is still significant moisture nearby). Several populations have been discovered that extend to 10–20 acres (D. W. Taylor, botanical consultant, personal communication).

The chromosome number is unknown. This species normally flowers from mid-July to September (rarely to October), with peak flowering approximately 25 July–10 August.

Representative specimens: USA. CALIFORNIA. **Butte Co.:** Flea Valley, T23N R4E S24, 3 Jul 1999, G. Clifton 36019 (JEPS); ca. 4.8 mi S of Inskip at water supply pond for Sterling City T24N R4E S21, 31 Jul 1980, R. A. Schlising & R. Banchemo 3940 (CHSC); 1.1 mi S of Inskip along Skyway, 31 Jul 1980, R. A. Schlising & R. Banchemo 3941 (CHSC); NE of Coyote Gap on Four Trees Rd T23N R2E S36, 11 Jul 1981, R. A. Schlising et al. 4140 (CHSC); near N end of Concow Reservoir T22N R4E S10, 8 Aug 1981, R. A. Schlising & C. A. Lawler 4190 (CHSC); N and E of De Sabla and Lovelock at "Doon



FIG. 3. Portion of inflorescence of *Sidalcea gigantea* showing open pistillate flowers. Hampshire Creek watershed, Yuba Co., CA. Photograph by Roy E. Buck.

Camp" just N of Little West Fork of Feather River T24N R4E S31, 26 Aug 1982, *R. A. Schlising 4374* (CHSC); Road 28N35 at a branch of Wildcat Creek ca. 1 mi N of Four Trees-Coyote Gap Rd, 11 Aug 1998, *V. Oswald & L. Ahart 9466* (UC); along Fall River, W of the bridge across Fall River, ca. 6 (air) mi NE of Feather Falls T21N R7E S27, 22 Jul 1993, *L. Ahart 7083* (UC); West Branch of Wildcat Creek, about 2 mi NE of Coyote Gap, T23N R6E S30, 3 Oct 1993, *L. Ahart 7269* (CHSC, JEPS); Four Trees Rd 0.6 km N of Coyote Gap, T23N R5E S35, 11 Aug 2002, *L. P. Janeway & B. Castro 7696* (CHSC, JEPS, VT); along Road 24N13 crossing an uppermost small branch of Lockerman Creek 0.6 km SSW of Logue Meadows T24N R5E S33, 4 Sep 2005, *L. P. Janeway 8534* (CHSC); at Concow Rd crossing of uppermost Keyser Creek 0.8 km ENE of Bald Mountain summit, T24N R4E S12, 12 Aug 2006, *L. P. Janeway 8838* (CHSC); ca. 2 air mi NE of Stirling City, Plumas Natl. Forest, 6 Aug 1995, *D. W. Taylor 15379* (JEPS, UC); ca. 3 air mi NE of Stirling City, near Jackass flat, Plumas Natl. Forest, 6 Aug 1995, *D. W. Taylor 15380* (JEPS, UC); ca. 6 air mi E of Stirling City, Keyser Creek, ca. 1.5 mi S of Bald Mountain summit, Lassen Natl. Forest, 6 Aug 1995, *D. W. Taylor & R. Fallscheer 15381* (JEPS); ca. 2 air mi N of Stirling City, Reston Rd, ca. 1.5 mi SW of Bald Mountain summit, Lassen Natl. Forest, 6 Aug 1995, *D. W. Taylor & R. Fallscheer 15389* (JEPS, UC); near Concow Reservoir (ca. 6 air mi E of

Paradise) along Hoffman Rd 0.3 mi W of Concow Rd, Lassen Natl. Forest, 6 Aug 1995, *D. W. Taylor & R. Fallscheer 15397* (ILLS); Four Trees Rd (Forest Road 23N00) ca. 0.3 mi N of Coyote Gap, 22 Jul 2004, *D. W. Taylor et al. 19207* (JEPS); Skyway 1.4 mi S of Inskip ["Inskip"], 12 Jul 1984, *V. Oswald 1569* (CHSC); N side of Oroville-Quincy Hwy ca. 1 mi S of Butte-Plumas Co. line, 21 Jul 1978, *M. S. Taylor 1834* (CHSC, MO); road to Bald Mt. ca. ¼ mi SW of Bald Mt., ca. 3 mi NE of Stirling City, 16 Aug 1982, *M. S. Taylor 4996* (CHSC, MO). **Plumas Co.:** N side of road to dam across Slate Creek ca. 100 yds N of Scales Rd ca. 5.5 mi due NE of Strawberry Valley, 23 Oct 2006, *L. Ahart 13461* (CHSC); along the Oroville-Quincy Highway paralleling Little Grizzly Creek west of Bucks Lake, 11 Aug 1998, *V. Oswald 9482* (CHSC); Grizzly Forebay at Bucks Lake T24N R6E S34, 31 Jul 1975, *F. T. Griggs & A. Pass 273* (CHSC); Oroville-Quincy Highway 1.1 mi W of Little Grizzly Creek, T23N R7E S7, 15 Aug 1996, *L. P. Janeway 5069* (CHSC, UC); Forest Service Rd 23N18 at Little North Fork Middle Fork Feather River, 20 Aug 1996, *L. P. Janeway 5075* (CHSC, UC); Oroville-Quincy Highway (and into adjacent meadow) 0.5 km W of Road 23N73Y at head of Little Grizzly Creek, 12 Aug 2002, *L. P. Janeway & B. Castro 7698* (CHSC, VT); between Road 24N13 and a NE tributary to upper Lockerman Creek ca. 1.3 km S of Logue Meadows T23N R5E S3, 4 Sep 2005, *L. P. Janeway 8532* (CHSC); along Road 24N13 along

the E side of Lynch Meadows T24N R5E S27, 4 Sep 2005, *L. P. Janeway 8535* (CHSC); Oroville-Quincy Highway 0.5 mi W of Forest Service Rd 23N73Y, 16 Aug 1999, *B. G. Baldwin 1089* (JEPS); Onion Creek headwaters ca. 0.5 air mi SW of American House, along Forest Rd 21N01Y ca. 0.3 mi W of junction Forest Rd 21N99, 2 Aug 2001, *D. W. Taylor 17878* (JEPS). **Shasta Co.:** Goose Valley, ca. 4 air mi NW of Burney, Shasta-Trinity Natl. Forest, W margin of valley, 2 Jul 1995, *D. W. Taylor 15210* (JEPS, UC); Goose Creek at its debouchment into Goose Valley (ca. 5 mi NW of Burney), 30 Jul 1995, *D. W. Taylor 15370* (ILLS); Highway 299 about 3 mi W of Hatchet Mountain Pass, tributary to Hatchet Creek 1 mi W of Carberry Flat, 30 Jul 1995, *D. W. Taylor 15372* (ILLS); Hwy 299 2.1 km W of Hatchet Mountain Summit, 8 Sep 1998, *V. Oswald & L. Ahart 9568* (CHSC, JEPS); Hatchet Mountain Pass Hwy 299 T35N R2E S30, 3 Jul 1999, *G. Clifton 36018* (JEPS); South Fork Digger Creek, 0.8 km W of Heart Lake, 24 Jul 1997, *D. W. Taylor 16151* (UC). **Sierra Co.:** bog on the N side of Forest Road 20N35 ca. 0.5 mi E of intersection with County Rd 690 (about 1 air mi NE of Union Hill), 2 Aug 2001, *D. W. Taylor 17889* (JEPS). **Yuba Co.:** meadow along Forest Rd 35 about 2 road mi SW from Union Hill, 2 Aug 2001, *D. W. Taylor 17880* (JEPS); ca. 1.7 air mi S of Sly Creek Reservoir and 5 mi E of Woodleaf along La Porte Rd 0.1 mi E of Travis Saddle [topotype], 30 Jul 1998, *B. Castro & L. Gehrung 818* (CHSC).

DISTRIBUTION AND HABITAT

Sidalcea gigantea is found on the western slope of the northern Sierra Nevada in extreme northeastern Yuba, western Sierra, eastern Butte and western Plumas Counties, north to the extreme southern Cascades in east-central Shasta Co., California. The southernmost known locality is near Hampshire Creek east of Clipper Mills (Butte Co.) in Yuba Co. The northernmost known locality is in Goose Valley in east-central Shasta Co. The north-south extent of its range is approximately 160 km. Although it is notably unknown in Tehama Co. in the middle of its range, much of that area is remote and rugged and additional populations may eventually be found in the intervening areas.

Sidalcea gigantea occurs at elevations between approximately 670–1950 m. The species does not appear to have very specific substrate preferences, as it occurs on a variety of sedimentary, igneous, and metamorphic substrates, including Paleozoic marine sedimentary rocks, Mesozoic granitic rocks, Mesozoic ultrabasic intrusive rocks, Pleistocene volcanic andesite, Pliocene volcanic basalt, Paleozoic metavolcanics, Jurassic-Triassic metavolcanics, Pre-Cretaceous metavolcanics, and

Quaternary glacial deposits (Lydon et al. 1960; Burnett and Jennings 1962).

Sidalcea gigantea is found at sites that are relatively mesic but that are usually adjacent to wetter areas, and it can grow in the open or in moderate shade. Habitats on labels have included locations near seeps or springs, sphagnum fens, streams, wet meadows, and shaded banks in middle to upper montane coniferous forest (especially Mixed Conifer Forest), as well as in drier edges of meadows. It has been collected most often in moderately moist meadows and around the margins of wet meadows dominated by a variety of herbaceous species, and in ecotonal areas between meadows and montane coniferous forests dominated by *Pinus ponderosa* C. Lawson, *Calocedrus decurrens* (Torr.) Florin, *Pseudotsuga menziesii* (Mirb.) Franco, *Abies concolor* (Gordon & Glend.) Lindl. ex Hildebr., and *Quercus kelloggii* Newb. Occasionally it occurs in openings in and around the margins of red fir forest dominated by *Abies magnifica* A. Murray, aspen forest dominated by *Populus tremuloides* Michx., or in riparian forest dominated by species such as *Salix lasiolepis* Benth. and *Acer macrophyllum* Pursh. It sometimes occurs along stream banks and it sometimes grows in disturbed areas, including roadside ditches, road banks, and graded areas, though with a stream or meadow nearby.

IDENTIFICATION AND TAXONOMIC RELATIONSHIPS

Sidalcea gigantea when well-developed is easily distinguished from the other species of *Sidalcea*. It is the one of the largest in stature of all of the species, with stems to 2.5 m tall. It is also distinctive in producing an extensive rhizome system that sometimes gives rise to dense, concentrated colonies of hundreds or even thousands of stems (Fig. 2), although stems are sometimes more scattered or limited. Additional characters, in combination, also serve to distinguish *S. gigantea* from the other taxa of *Sidalcea*, including: 1) long (to 0.6 m), thick (to 1.0 cm in diameter) rhizomes that are bristly-pubescent when young; 2) stem bases with many long, retrorse, bristly hairs; 3) thick (to 1.4 cm in diameter), hollow stems; and 4) fruit segments that are almost equally three-sided.

This new species has been confused most frequently with *Sidalcea malviflora* subsp. *celata* (Jeps.) C. L. Hitchc. (= *S. celata* (Jeps.) S. R. Hill) and *S. malviflora* subsp. *asprella* (Greene) C. L. Hitchc. (= *S. asprella* Greene), both of which were included within *S. malviflora* subsp. *asprella* by Hill (1993) and are now treated as distinct species (Hill 2009). Several *Sidalcea* species can reach heights of more than 1 m, and a few tend to reach 1.5 m and above (Hitchcock 1957),

including *S. campestris* Greene (Willamette Valley, OR), *S. candida* A. Gray (CO, NM, UT, WY), *S. cusickii* Piper (western OR), *S. malachroides* (Hook. & Arn.) A. Gray (coastal CA and OR), *S. neomexicana* A. Gray (ID and eastern OR to CA, CO, south to northern Mexico), *S. oregana* subsp. *spicata* (Regel) C. L. Hitchc. (CA, OR, NV), and *S. oregana* subsp. *valida* (Greene) C. L. Hitchc. (Sonoma Co., CA). Some of these have stems that can infrequently attain 1 cm in diameter and are somewhat hollow at this size, but their other characters do not match those of the new species. Schlising (1987) treated specimens now identified as *S. gigantea* as *S. malviflora* subsp. *celata*, but Oswald (2002) recognized them as an unnamed taxon. As interpreted by Oswald (2002) and as currently recognized, *S. celata* (= *S. malviflora* subsp. *celata*) is restricted to a small area of southwestern Shasta Co. and adjacent northern Tehama Co. within the Inner North Coast Ranges. Its range does not overlap that of *S. gigantea*. *Sidalcea asprella*, as recognized by Hill (2009), is more widespread, ranging at least from the central Sierra Nevada in Mariposa Co. northward to southwestern Oregon (including portions of the northern Sierra Nevada, southern Cascade Ranges, and Klamath Ranges), a range that either includes or is adjacent to that of *S. gigantea*. Within the area of overlapping range, *S. asprella* can be distinguished from *S. gigantea* by its shorter stature (normally <1 m), its ascending-supported, often decumbent-based stems, generally by its less free-rooting short rootstocks or rhizomes generally <10 cm (to 11–30 cm) long, and by a stem base with minute or larger stellate (not simple) hairs.

An early monograph by Roush (1931) would place this new species within *Sidalcea* Subgenus *Eusidalcea* Section *Perennes*. A revised treatment of *Sidalcea* in North America (north of Mexico) is being produced for the Flora of North America series by one of the co-authors of this article (Hill) and a discussion of species alignments will

be presented there along with a revised nomenclature. Most recently, *S. gigantea* has been grouped with putatively related taxa within an informal ‘*asprella*’ or ‘*celata*’ group (Andreasen and Baldwin 2001, 2003a, b). According to Katarina Andreasen (Uppsala University, personal communication), who along with Bruce Baldwin has studied the DNA of most of the species of *Sidalcea* (Andreasen and Baldwin 2001), “There are essentially no differences between the [molecular] sequences in this ‘*celata*’ group”. *Sidalcea gigantea* was discussed again in subsequent molecular phylogenetic studies of *Sidalcea* that utilized internal and external transcribed spacers (ITS and ETS) of 18S–26S nuclear ribosomal DNA (Andreasen and Baldwin 2003a, b). Among the specimens studied by Andreasen and Baldwin were four samples (*Baldwin 1089*, *Clifton 36018*, *Clifton 36019*, all at JEPS, and *Oswald 9466* at UC) of the then unnamed *S. gigantea*, and they could not be separated significantly from samples of other species in this grouping, including *S. asprella*, based on their DNA sequences (Andreasen and Baldwin 2003a). This study placed *S. gigantea* in a well-supported “*asprella* clade” that also included *S. asprella* and *S. celata* (cited in the paper as ‘*asprella* 4’), as well as what they called *S. maxima* M. Peck, *S. hirtipes* C.L. Hitchc., *S. campestris* Greene, and a putative hybrid, *S. asprella* × *S. oregana* (Torr. & A. Gray) A. Gray subsp. *oregana*. These studies also placed the “*asprella* clade” within a larger “*glaucescens* clade” that contained, in addition to the above taxa, *S. glaucescens* Greene, *S. multifida* Greene, *S. robusta* A. Heller, and another sample of *S. asprella*.

The following key serves to distinguish *Sidalcea gigantea* and the other perennial *Sidalcea* taxa found within or near its range in northeastern California (including the following counties: Butte, Nevada, Plumas, Shasta, Sierra, Tehama, and Yuba). Names used are according to Hill (2009).

1. Mericarp mucro 0; calyx bractlets 3; leaves generally evenly arrayed on stem both early and late in season (not mostly on lower stem or basal), similar in shape and unlobed [Nevada Co. only]. *S. stipularis* J. T. Howell & True
- 1' Mericarp mucro 1 (occasionally minute); calyx bractlets 0; some leaves located on lower stem or stem base at least early in season (or not), occasionally rosette-like, basal leaves crenate, leaves above generally deeply lobed
 2. Plants 1(–)1.5–2(–2.5) m tall, with rhizomes to (0.5–)1 cm in diameter, 4–6 dm long, bristle-hairs reflexed; stem base erect, hollow, with dense reflexed bristles; mericarp ± equilateral *S. gigantea* G. Clifton, R. E. Buck & S. R. Hill
 - 2' Plants generally less than 1(–1.5) m tall, with or without rhizomes, if present these generally less than 1 cm in diameter; stems solid (hollow), hairs variable, occasionally bristle-like or lacking; mericarp equilateral or not
 3. Mericarp narrowly wing-margined, generally glabrous; stem erect, glabrous, glaucous above; [Butte Co. only] *S. robusta* Heller ex E. M. Roush

- 3' Mericarp not wing-margined, generally pubescent; stem erect or not, usually pubescent (sometimes sparsely so), glaucous or not
4. Stems long-prostrate, free-rooting, base with bristle-hairs 2–3 mm long, 0 stellate; leaf hairs simple; mericarps densely bristly stellate-puberulent on top, back, and/or micro; [Nevada Co. and south] *S. reptans* Greene
- 4' Stems not long-prostrate nor very elongate and free-rooting, more compact, base with shorter bristles or hairs stellate; leaf hairs various; mericarps sparsely puberulent to nearly glabrous
5. Stems ascending to sprawling, not strictly erect from base; plant height usually 0.5 m or less
6. Stems not rooting at base; plants very glaucous; stem base glabrous to sparsely stellate-pubescent; basal leaves few, generally 5-lobed; mericarps glandular-puberulent *S. glaucescens* Greene
- 6' Stems commonly rooting at base; plants scarcely if at all glaucous; stem base stellate-pubescent; most leaves basal, generally 7-lobed; mericarps with few minute bristles *S. asprella* Greene subsp. *nana* (Jeps.) S. R. Hill
- 5' Stems usually erect from base; plant height 0.8 m or more
7. Stems several, clustered, erect and not rooting at base; flowers relatively small; inflorescence not secund, often congested; petals of bisexual flowers 1.0–1.5 cm long
8. Open flowers and fruits often not overlapping on axis; calyx hairs uniformly stellate; bud bracts equal to or shorter than buds. *S. oregana* (Torr. & A. Gray) A. Gray subsp. *oregana*
- 8' Open flowers and fruits usually overlapping on axis; calyx hairs uniformly stellate or often with some bristles; bud bracts usually longer than buds *S. oregana* subsp. *spicata* (Regel) C. L. Hitchc.
- 7' Stems few or one, erect or ascending, rooting at base or not; flowers larger; inflorescence often secund, not congested; petals of bisexual flowers 2–2.5 cm long
9. Plant with caudex, stem bases not rooting, rhizome 0; stem generally erect, free-standing, base with stiff reflexed bristle- (coarse few-rayed stellate) hairs; leaves lobed, differing in shape, uppermost with linear entire or semi-entire lobes; [Shasta, Tehama cos. only]. *S. celata* (Jeps.) S. R. Hill
- 9' Plant with caudex or not, gen with short rooting stem bases or rhizomes <10 cm (to 30 cm); stems often weak, supported by other plants, base with minute or larger stellate hairs; leaves generally lobed and all similar in shape, lobes generally toothed; [more widespread, Humboldt to Mariposa cos.]. *S. asprella* Greene subsp. *asprella*

RARITY AND CONSERVATION STATUS

Sidalcea gigantea is endemic to California. Colonies are generally local, and although more than forty collections are known, many are from the same few colonies. *Sidalcea gigantea* also appears to be a species with ecologically specialized microhabitat preferences that are probably largely determined by a specific soil moisture regime. Observations also suggest that the species increases or becomes more robust after fire (D. W. Taylor, personal communication). Fires may be, at least in part, responsible for its occurrence in localized populations. Suitable habitat is widely scattered but limited in extent within the species' range, but there appears to be additional apparently suitable habitat within its range from which the species is absent.

Most of the known localities of *Sidalcea gigantea* are relatively undisturbed. The species appears to tolerate limited surface disturbances that do not substantially damage the rhizome system. It can colonize some roadside areas, but these plants are somewhat depauperate and there is no evidence that the species is tolerant of extensive or prolonged disturbance that results in significant soil disruption. It is likely to appear after fires from the soil seed bank. Logging operations and associated road building or road maintenance and improvement near moist drain-

ages, especially where plants are near road margins, could threaten some populations. Much additional study is needed.

Given the known distribution of *Sidalcea gigantea*, the remoteness of many known localities, and the nature and level of potential threats to the species, this species should not be considered endangered at present. It is, however, uncommon and local enough that its status should be monitored. We recommend that *S. gigantea* be considered for inclusion on List 4 (Plants of Limited Distribution—A Watch List) of the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS 2001, 2008).

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